

REMARKS

Claims 1-34 were pending in the application prior to entering this amendment.

The examiner rejects claims 1-7 and 9-34 under 35 USC § 102(b) [sic] as being anticipated by Chen et al. (US Patent No. 6,367,933).

The examiner rejects claim 8 under 35 USC § 103(a) as being unpatentable over Chen view of Kawashima et al. (U.S. Pat. No. 6,592,228).

The applicants amend claims 1-2, 14, and 26 and add new claim 35.

The application remains with claims 1-35 after entering this amendment.

The applicants add no new matter and request reconsideration.

Claim Rejections Under § 102

The examiner rejects claims 1-7 and 9-34 as old over Chen. The applicants traverse the rejection for the reasons that follow.

Chen discloses a method and apparatus for preventing keystone distortion where the original image is deformed in proportion to the projection angle to produce the display mage. Chen's apparatus includes a digitizer module to receive and resize an original image (e.g., reduce it) for storage and a generator module to resize (e.g., enlarge) the image to fit the display device. Chen deforms the image to prevent keystone distortion in either or both of the digitizer and generator for either or both a vertical and horizontal angle.

The present application also discloses a method and apparatus for preventing keystone distortion. Unlike Chen, however, the present application relies on a user selecting or otherwise indicating a plurality of parameters, e.g., image corners and center, of the desired (undistorted) image within a projected (distorted) image using an interface. A driver interprets the user's selected parameters to calculate horizontal and vertical rotation angles stored in scalar registers, in turn, used by a controller to predistort the image such that when projected, the predistorted image exhibits little to no keystone distortion.

Claim 1 recites *selecting a plurality of corners within an original image projected as a distorted image on a projection surface using a graphical user interface*. Claim 14 recites *means for graphically selecting a plurality of corners within an original image as projected distorted on a projection surface*. Claim 26 recites *a user interface to allow a user to graphically identify a plurality of corners of an original image as projected as a distorted image on a surface*.

The examiner alleges Chen discloses the recited selecting by the corners of screen image 140 and at column 2, lines 48-49. The screen image 140 shown in Chen's figure 1C indeed has four corners, but there is no indication in Chen that these corners are in any way selected by a user much less selected to inform the recited predistorting.

As we have previously argued, Chen discloses no selecting as recited. Chen does not purposefully or intentionally disclose choosing from among several or picking out any corners as selecting is understood by a person of skill in the art.¹ None of Chen's extensive figures 1-24 disclose such a corner selection. None of Chen's figures 19-24 that specifically illustrate flowcharts describe the selection of corners. For example, step 1904 of figure 19 discloses "deform image according to projection system angle(s)." Nothing in the specification, however, discloses that the determination of the projection system angle requires the selection of corners of a particular image, much less of the original image as projected distorted on a projection surface as recited. Chen describes the following beginning at column 15, line 60 to column 16, line 11.

"In the presently described embodiment, the original image is received as if it were to be rendered on the LCD panel without being deformed or altered. From its position within the LCD panel, the image is then rotated by tilt angle .theta. about an axis extending through the center of the LCD panel and parallel to the x-axis. Rotation of the image by angle .theta. places it in a plane parallel to the viewing surface. The image is then translated along the z-axis, keeping its center on the z-axis, away from the LCD panel and toward the screen or viewing surface, until just one edge of the image coincides with the plane of the LCD panel. We may refer to this image as Image_1, as it is a first step in the derivation of Image_2 (the deformed image that is rendered and projected with little or no keystone distortion). In this position (e.g., parallel to screen 130), the relation of the Image_1 plane to the plane of the LCD panel recreates tilt angle .theta., and

¹ To take as a choice from among several; pick out. *The American Heritage Dictionary of the English Language*, Third Edition.

their centers are collinear with the projection axis of light source
102.” (*Emphasis added*)

The passage should make it clear that Image_1 is not the same as the original image as projected distorted on a projection surface, and that the determination of the projection angle does not involve any selection of corners within that projected distorted image. It is unclear how the examiner justifies making moot previously made arguments based on changing a designation of corners (Figure 9B, elements C0, C1, C2, and C3) to the presently proposed corners of image 140 and associated indicated passage.

The examiner’s indicated passage at column 2, lines 48-49, do not cure the inadequacy of the rejection. Chen discloses that an “original image may be deformed on a line-by-line, pixel-by-pixel, or other basis.” Chen continues to explain that “several parameters are calculated to identify the usable area of the display device.... Then, for each selected or usable portion (e.g., pixel) of the display device, a corresponding portion of the original image (e.g., a pixel or set of pixels) is identified by applying one or more geometrical or mathematical relationships.”

The applicants concede that an image may be deformed using a variety of basis, including the basis listed. The applicants disagree, however, that Chen’s line-by-line or pixel-by-pixel basis electronic deformation of an original image by a computational module discloses the (graphical) *selecting by a user of a plurality of corners within an original image projected as a distorted image on a projection surface using a graphical user interface*. Nothing in Chen suggests that the selecting is occurring *within an original image projected as a distorted image on a projection surface*, much less using a graphical user interface as the claim requires.

Claim 2 recites *aligning a center of the original projected image with a center of the projection surface*. Claims 15 and 27 include a similar limitation. The examiner alleges that Chen’s disclosure of Image_1’s coordinate system having an origin at O discloses the recited aligning. But again, Image_1 is not the same as the original image as projected distorted on a projection surface as we explain above. Therefore, Image_1’s coordinate system, whatever it may be, cannot disclose the recited aligning, where the aligning is of *a center of the original projected image with a center of the projection surface*

Chen fails to disclose the elements and limitations recited in claims 3-7, 9-19, and 21-34.

Claim 20 recites *a means for on screen display to interact with a user to select the plurality of corners*. The examiner alleges Chen discloses the recited means for an on-screen display at column 17, lines 3-9 as follows.

“When offsets are not injected into the computations, however, the geometric centers of Image_1 and Image_2 coincide on the same beam of light from light source 102 (e.g., as shown in FIGS. 7A-7B). Advantageously, this alignment carries through to the projected image, thus necessitating little, if any, adjustment by an operator or user to ensure an accurate reproduction of the original image.”

The applicants fail to understand how the passage above discloses a means for on screen display as recited. The applicants seek the examiner’s counsel, noting that Chen appears nowhere in its extensive disclosure to once use the terms OSD or on-screen display.

The examiner rejects the interface recited in claims 26 and 28 as disclosed by the Chen’s element 204. But claim 26 recites *a user interface to allow a user to graphically identify a plurality of corners of an original image as projected as a distorted image on a surface*. And claim 28 recites *the interface is a graphical user interface*. The examiner alleges Chen’s element 204 discloses the recited user interface. But element 204 is a memory interface (see column 25 lines 30-37 as previously pointed out) that appears to have no ability to allow a user to graphically identify a plurality of corners as required by the claim. Nothing in the singular passage that discloses memory interface 204 does Chen suggest that the interface 204 is accessible by a user, much less graphically accessible by a user to select corners.

For the reasons expressed above, new claim 35 is likewise new and not obvious over the references of record.

Claim Rejections Under § 103

The examiner rejects claim 8 as obvious over Chen in view of Kawashima. The applicants traverse the rejections for the reasons that follow.

The examiner alleges that Chen discloses the salient features recited except where the selecting comprises using an on screen display means to do the selecting. The examiner proposes that Kawashima provides this missing link. The applicants disagree with the examiner

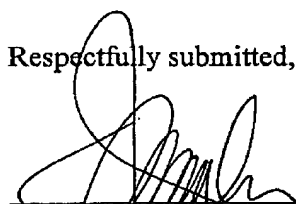
that Chen discloses the salient features of the invention as we explain above. And the applicants disagree that Kawashima's disclosure of displaying an automatic setting using an OSD discloses an OSD interface that a user graphically manipulates to select image parameters (e.g., corners or center) while that image is actually projected on a projection surface.

Conclusion

The applicants request reconsideration and allowance of all remaining claims. The applicants encourage the Examiner to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

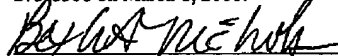
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